REMARKS

Claims 1-5 and 7-20 are pending in the application. Claim 6 has been canceled. Claims 10-20 are new. Applicant submits that claims 10-20 do not constitute new matter.

Applicant believes the pending claims are allowable over the art of record for the reasons set out below and therefore respectfully requests reconsideration and allowance of all pending claims.

Rejections Under 35 U.S.C. §103(a)

Claims 1, 3, and 5

Examiner rejected claims 1, 2, and 5 are rejected under 35 U.S.C. §103(a) as being anticipated by Johnson et al. (U.S. Patent No. 4,117,312) in view of Horsma (U.S. Patent No. 4,314,145).

Applicant respectfully submits that claims 1, 2, and 5 are not obvious to one of ordinary skill in the art based on Examiner's proposed combination of *Johnson* and *Horsma*. Claims 1, 3, and 5 recite that "at least one of the conductors is encased in a sheath of material which has a positive temperature coefficient." Examiner states that *Johnson* discloses all of the features of claims 1, 2, and 5 except a sheath of material encasing at least one of the conductors. Examiner refers to PTC layer 36 of *Johnson*, which is coated on at least one of the conductors 10, 12 and alleges that it would have been obvious to substitute the layer 36 of *Johnson* with a sheath of PTC material as taught by *Horsma*. However, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.[1] In deciding whether the claims are obvious, the prior art references must also be considered in their entirety, i.e., as a whole, including portions that would lead away from the claimed invention.[2] In *Johnson*, heating material 38 only extends between the conductors 10, 12. *Johnson* is therefore only concerned with controlling the amount of heat generating current flowing from the conductors 10, 12 to the heating material 38 through the inside portion of the conductors 10, 12 that is bordered by the heating material 38. Current flowing through the conductors 10, 12 not bordered by the heating material 38 would not be a concern as the current is handled by the insulation material 40. Thus, there would be no need to

[1] *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); *see also In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

[2] *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

completely surround either of the conductors 10, 12 with PTC material to control the overheating of the heating material 38 and that is why *Johnson* teaches a PTC layer 36 only on a portion of the conductor 10 instead of a PTC sheath. In fact, *Johnson* actually teaches away from providing a complete sheath of PTC material because doing so would be overkill. As the complete sheath is unnecessary, only a strip should be used so that material costs and assembly costs can be kept to a minimum, thus increasing the commercial viability of the *Johnson* heating cable.

Further bolstering the above arguments in support of the nonobvious nature of the present invention is the realization that *Johnson* was published nearly thirty years ago and yet Applicant is not aware of the existence of any electrical heating cable according to the invention of the present application. It would seem that, if the invention were indeed obvious in light of *Johnson*, it would have been disclosed by now. Additionally, the Assignees of the *Johnson* & *Horsma* patents are Thermon Manufacturing Company, and Raychem Corporation respectively. These are both large multinational companies well known by all in the field of electrical heating cables. With regard to *Johnson* & *Horsma*, both of these patents were filed and published in the late 1970s/early 1980s. That is, at the time of the priority date of this application, the skilled person would have had at least twenty years in which to combine the disclosures of *Johnson* and *Horsma* to create a heating cable having all of the features of the claimed invention. Quite simply, the skilled person has not undertaken such a combination. If the claimed invention is an obvious modification of *Johnson* and *Horsma*, then why in those 20 years has no one used the teachings of *Johnson* and *Horsma* to create and disclose a heating cable as claimed? Applicant respectfully submits the reason is because the claimed invention is truly not obvious over *Johnson* in view of *Horsma*. Applicant respectfully submits that Examiner is using the disclosure of the current application to piecemeal together the claimed invention through *Johnson* and *Horsma* and that doing so amount to impermissible hindsight and not to the claims being obvious to one of ordinary skill in the art.

In view of at least the reasons above, Applicant respectfully traverses and submits that claims 1, 2, and 5 are not obvious when considering *Johnson* and *Horsma*. Thus, Applicant requests that the rejection of claims 1, 2, and 5 be removed.

Claims 1-5

Examiner rejected claim 1-5 under 35 U.S.C. §103(a) as being unpatentable over Heizer (U.S. Patent No. 6,144,018) in view of *Horsma*.

Applicant respectfully submits that claims 1-5 are not obvious to one of ordinary skill in the art based on Examiner's proposed combination of *Heizer* and *Horsma*. Claims 1-5 recite that "at least one of the conductors is encased in a sheath of material which has a positive temperature coefficient." Examiner states that *Heizer* discloses all of the features of claims 1-5, except a sheath of material encasing at least one of the conductors. *Heizer* actually specifically discloses that both conductors 1 are sheathed in insulating material 2. Examiner alleges that it would have been obvious to substitute the insulation sheath 2 of *Heizer* with a sheath of PTC material as taught by *Horsma*. However, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.[3] In deciding whether the claims are obvious, the prior art references must also be considered in their entirety, i.e., as a whole, including portions that would lead away from the claimed invention.[4] *Heizer* is not concerned with improving on the heat self-limiting characteristics of prior are heater cables. Instead, *Heizer* focuses on solving problems relating to the flexibility and longevity of the heater wire 5 that is wrapped around the conductors 1 sheathed in insulation 2. In fact, as far as self-limiting the heat output of the heater cable, *Heizer* teaches doing so by making the heater wire 5 a PTC material itself, rather than placing a PTC sheath around either of the conductors 1.[5] Thus, one of ordinary skill in the art would not consider modifying *Heizer*'s insultation sheaths 2 because doing so would be completely unnecessary and would not even be a consideration when focusing on the problems *Heizer* attempts to solve. Thus, there would be no need to completely surround either of the conductors 1 with PTC material to control the heat output of the heating cable of *Heizer* and that is why *Heizer* teaches only using insulation sheaths 2 on the conductors 1 and teaches away from including PTC material on the conductors 1 at all.

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[3] *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); *see also In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

[4] *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

[5] *Heizer*, column 5, lines 1-2.

Further bolstering the above arguments in support of the nonobvious nature of the present invention is the realization of the age of the references. The inventor for the *Heizer* patent is Glenwood Franklin Heizer, also well known to people and corporations in the field of electrical heating cables. *Heizer* was filed only 5 years before the priority date of this application. *Horsma*, on the other hand, was published in 1982. That means that Heizer, a well known inventor in the field of electrical heating cables, would have had 15 years in which to have become aware of the disclosure of *Horsma*, and to use the sheath disclosed therein in the heating cable for which he was about to file a patent application. Quite simply, he did not. *Heizer* did not disclose the use of a PTC sheath encasing a conductor of a heating cable. If the inclusion of the features of *Horsma* were so obvious, and advantageous, why did *Heizer* not include them in his application? Furthermore, in the few years between the publication of *Heizer* and the priority date of this application, again, no heating cable was disclosed having the combined features of the claimed invention. If the claimed invention is an obvious modification of *Heizer* and *Horsma*, then why has no one used the teachings of *Heizer* and *Horsma* to create and disclose a heating cable as claimed? Applicant respectfully submits the reason is because the claimed invention is truly not obvious over *Heizer* in view of *Horsma*. Applicant respectfully submits that Examiner is using the disclosure of the current application to piecemeal together the claimed invention through *Heizer* and *Horsma* and that doing so amounts to impermissible hindsight and not to the claims being obvious to one of ordinary skill in the art.

In view of at least the reasons above, Applicant respectfully traverses and submits that claims 1-5 are not obvious when considering *Heizer* and *Horsma*. Thus, Applicant requests that the rejection of claims 1-5 be removed.

Claims 7-9

Examiner rejected claims 7-9 under 35 U.S.C. §103(a) as being unpatentable over *Johnson* in view of *Horsma* as applied to claim 1, and further in view of Cole (U.S. Patent No. 4,684,785). Examiner also rejected claims 7-9 under 35 U.S.C. §103(a) as being unpatentable over *Heizer* in view of *Horsma* as applied to claim 1, and further in view of *Cole*.

Claims 7-9 depend directly and indirectly from allowable claim 1. Applicant refers Examiner to the remarks above regarding claim 1. As claims 7-9 depend from allowable claim 1,

Applicant respectfully submits that dependent claims 7-9 are also allowable. Applicant therefore respectfully requests that Examiner remove the rejection of dependent claims 7-9 as well.

CONCLUSION

Applicant respectfully requests reconsideration the pending claims and that a timely Notice of Allowance be issued in this case. If the examiner feels that a telephone conference would expedite the resolution of this case, the examiner is invited to contact the undersigned.

In the course of the foregoing discussions, Applicant may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. There may also be other distinctions between the claims and the prior art that have yet to be raised, but that may be raised in the future.

Unless Applicant has specifically stated that an amendment was made to distinguish the prior art, it was the intent of the amendment to further clarify and better define the claimed invention and the amendment was not for the purpose of patentability. Further, although Applicant may have amended certain claims, Applicant has not abandoned its pursuit of obtaining the allowance of these claims as originally filed and reserves, without prejudice, the right to pursue these claims in a continuing application.

If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769 (ref. 2135-00500) of Conley Rose, P.C., Houston, Texas.

Respectfully submitted,
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